REMARKS

Claims 1 – 10 have been rejected under 35 U.S.C. Section 112, second paragraph, as being indefinite for the reasons set forth in the Office Action. The claims have been revised to overcome this rejection.

Furthermore, new independent claims 11 – 13 are presented. Claim 11 contains all features of original claim 1 and is limited by the features of original claim 3. Claim 12 includes also all features of original claim 1 and is limited by the features of original claim 4. Finally, claim 13 contains all features of original claim 1 as well and includes the following new limitations: "database contents of files of relational databases DB2"; "real time statistics" and the maintenance functions "COPY, REORG or RUNSTATS". The limitation "real time statistics" is initially disclosed in paragraph 13, 30, 31, 36, 45. The limitation relating to "COPY, REORG or RUNSTATS" is initially disclosed in paragraph 7, 30, 35.

Claims 1 – 10 have been rejected under 35 U.S.C 103(a) as being unpatentable over Vos et al. in view of Leung et al. For the following reasons, reconsideration and withdrawal of this rejection is respectfully requested.

Applicant respectfully disagrees with the examiner's assumption that the method according to the invention is unpatentable over Vos et al. in view of Leung et al.

Essential for the invention is the feature of the method that the system is a database-integrated system. The system according to the invention is integrated in the database, it is a component part of the database itself. This is the main difference between the invention and the systems disclosed in the cited references.

The systems of the cited references are external systems. Such systems exhibit several disadvantages. The performance of the database in those systems is significantly reduced because the external systems require additional resources. As a result, the access time to data objects increases. Moreover, it is possible that periods occur during which an access to data objects is avoided for maintenance reasons. Those disadvantages are significantly reduced by the method of the invention because the method uses an inventive database-integrated system. This is initially disclosed in paragraph 12 of the specification:

> *"The technical problem derived from the aforementioned is solved in accordance with the invention by a method for real time maintenance of*

database contents, in particular of files of a relational database, in particular DB2, wherein the status of database content is determined using a database-integrated status monitor, wherein status data of the determined statuses is output in real time using said database-integrated status monitor, wherein said output status data is analyzed and compared with comparison data, and wherein maintenance functions are mostly activated directly following a positive compare result."

Furthermore, this inventive feature is disclosed in paragraph 31:

"The RTS feature integrated in the database uses only a few resources and thus database performance does not suffer due to the constant provision of statistics in the RTS tables.";

and paragraph 45:

"In particular, by utilizing the status monitoring that is integrated in the database (RTS), the status of the data sets can be monitored with little effort and maintained as needed."

The advantages of such a database-integrated system according to the invention are a largely uniform database workload with maintenance tasks and the database content is constantly available for the applications. Further, time frames for maintenance utilities must not be defined. However, it is guaranteed that the status of the data always corresponds to the stipulated criteria (para.17)

By way of contrast, the method according to Vos et al. is based on an external system. In paragraph 61 of Vos et al. it is described:

"Throughout the following description, DB2 is used as an example of one DBMS to which Object Advisor may be applied..."

It is obvious to one skilled in the art that the system disclosed in Vos et al. is an external system because the Object Advisor is applied. Furthermore, this is also apparent from Figure 6 of Vos et al. At first an object usage data collector 602 is illustrated. This unit is used for data collection. However, the usage data collector 602 is not integrated in the database. It accesses to information of database objects from outside of the database.

"In one embodiment, the Data Collection components may utilize high-speed collection techniques to gather information about database objects such as Database objects." (Vos et al.: *para.64)*

Moreover, it is shown in Figure 6 of Vos et al. that the object usage monitor 604 uses the determined information by the object usage data collector 602. The object usage monitor 604 is also an external component.

"In one embodiment, the object usage monitor 604 may execute continually and track information about how specific database objects are used." (Vos et al.: *para.66)*

The object usage monitor 604 also obtains information about database objects. However, the unit is not integrated in the database, as it is in the present invention. Therefore, in Vos et al. neither the usage data collector 602 nor the object usage monitor 604 are database-integrated and thus their performance is significantly lower than the performance of the claimed invention.

This main difference exists between the subject matter of the invention and Leung et al. as well. Leung et al. teaches also an external system. It relates to monitoring a large parallel database. However, the database monitor 308 is not integrated in the database (fig.3). Performance information is acquired from an interface exposed by a database:

"Monitoring a database typically involves acquiring performance information from an interface exposed by a database instance..." (Leung et al.: col.1, l. 39-41);

and further

"The parallel database monitor [308] ("monitor") sees Node 1 [312], Node 2 [314], and other nodes (as indicated by the ellipses) including Node n [316]. Each of the nodes [312, 314, and 316] contain database partitions and have SQL interfaces [318, 322, and 326], and monitoring interfaces [320, 324, and 328]." (Leung et al.: col.4, l.47-54).

From the above citations it becomes apparent that the database monitor 308 is an external unit and not integrated in the database. It uses interfaces to determine the required information. The

object according to Leung et al. is to get a better performance for parallel databases. This object differs completely from the object of the invention.

Accordingly, neither of the cited references teaches a database-integrated system and hence those references, whether considered individually or in combination, cannot be properly considered to render claims 1-10, as amended, to be unpatentable.

New claims 11 – 13 are also not rendered obvious by Vos et al. in view of Leung et al. Claim 11 requires the step of adjusting status threshold values for different database contents, groups of database content or different maintenance functions, respectively. It is found that different database content or different groups of database contents, respectively, are subject to different conditions according to their status. Higher demands are made for critical parts of a system and frequently used database contents than for uncritical parts of a system and rarely used database contents. Therefore, the invention proposes that different maintenance functions are adjustable depending on the database content. Vos et al. only proposes performing a maintenance function depending on one determined status (Vos et al.: para.76-79). However, it does not propose that different maintenance functions be adjustable according to different states, like the claimed invention.

Leung et al. does also not disclose this feature of the invention.

> *"The performance value is then compared to a predefined threshold value. The database server [202] contains a collection of databases [204]. The database monitor [206] collects the performance statistics based on instructions from the user." (Leung et al.:col.4, l.7-11)*

From the above citation it becomes apparent that a threshold value depending on different conditions of the states of different database content or different groups of database contents, respectively, according to the invention, is not disclosed by Leung et al. The threshold value according to Leung et al. is predefined. However, that reference does not propose that different maintenance functions be adjustable according to different states, as does the present invention..

Claim 12 requires that at least two different threshold values be created, one rigid status threshold value and one soft status threshold value. In case the soft status threshold value is reached, maintenance functions can be activated depending on further criteria. If the rigid status threshold value is reached, the maintenance functions are immediately activated.

For example, Figure 1 shows in step 10 the monitoring of the soft status threshold value, whereby in step 10 further criteria, like the load or explicit exclusions of maintenance work, are monitored at any time. Only for database contents which have reached the soft status threshold value, but not the rigid status threshold value, it is checked in step 20 whether exceptions exist. The values which have reached the rigid status threshold value activate immediately maintenance functions. The differentiation between soft and rigid status threshold values reduces the load of databases, because maintenance is only performed if the rigid status threshold value is reached or the framework requirements allow an execution.

Such a scaled maintenance is not disclosed in Vos et al. or Leung et al. Leung et al. only describes one threshold (Leung et al.:col.4, l.7-11). No further information is disclosed in Leung et al. The above features are also not apparent from Vos et al. Vos et al. only proposes setting a single threshold value which can be adjusted.

> *The product tuning analysis component 618 may manage and automatically adjust the thresholds used to monitor data usage and the thresholds used in problem determination." (Vos et al.: para.74)*

However, the use of soft and rigid status threshold values is not disclosed in Vos et al. Therefore, neither in Vos et al. nor in Leung et al. teaches using soft and rigid status threshold values to reduce the load, as claimed in claim 12.

Status monitor and maintenance functions are claimed in new claim 13. The method recited in claim 13 relates only to the database DB2 of IBM. For monitoring such a database in real time, real time statistics (RTS) are used (para.13, 30, 31, 36, 45). That feature is not disclosed in Vos et al. nor in Leung et al. However, it describes in detail how the monitoring of a database is performed according to the invention.

By way of contrast, in Vos et al. an object usage monitor 604 is disclosed, which differs from the inventive method. The object usage monitor 604 obtains the required information from an object usage data collector 602 (Fig.6). Leung et al. discloses a parallel database monitor 308 which determines the information over interfaces (Leung et al.: col.1, l. 39-4; col.4, l.47-54). However, the claimed monitoring is not disclosed in either of the cited references.

Moreover, the concretely used at least one of the maintenance functions "COPY, REORG or RUNSTATS" are additionally required by claim 13. A detailed explanation is those functions is disclosed in paragraph 7, 30, 35. Neither Vos et al. nor Leung et al. teach these maintenance

functions. Therefore, those references, whether considered individually or in combination, would not lead a person having ordinary skill in the art to use those functions for maintenance.

A Request for Continued Examination and the required fee are presented in order to permit consideration of the amended and newly presented claims. Favourable consideration is respectfully requested.

Respectfully submitted,

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